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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,907

06/27/2005

Nobuo Ando

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3398

7278

7590

04/27/2009

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EXAMINER

CANTELMO, GREGG

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/540,907	<b>Applicant(s)</b> ANDO ET AL.	
	<b>Examiner</b> Gregg Cantelmo	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/27/05; 10/6/08</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

**DETAILED ACTION**

***Response to Amendment***

1. The amendment received March 27, 2009 has been entered.

***Election/Restrictions***

2. Applicant's election with traverse of Group I, claims 1-12 in the reply filed on March 27, 2009 is acknowledged.

Applicant's election with traverse in the reply filed on March 27, 2009 is acknowledged. The traversal is on the ground(s) that the groups all correspond to the same special technical feature recited in claim 1. This is not found persuasive with respect to claims 14-18 for the following reasons. With respect to claim 14, the claim defines a method of making the product whereas claim 1 is directed to the product. Claim 14 does not depend on claim 1 and the product of claim 1 is not limited to the method of claim 14. For example the product of claim 1 does not require a sealing of the battery as required in claim 14 nor does the product require the step of providing lithium ions to the electrodes by flow of current but only that the cell of claim 1 can be supplied with lithium ions. Thus the product of claim 1 and the method of claim 14 are held to be distinct and restriction is proper. Regarding claims 1 and 17-18, Applicant alleges that these claims relate to a single inventive concept. However this argument is not persuasive. The invention of claim 1 is not shown to have any inventive concept therein (as evidenced by the prior art rejections below and as evidenced by the corresponding international search report which remarks that claims 1-16 lack an

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inventive step). Therefore there is no single common inventive concept between claims 1 and 17-18. The requirement is still deemed proper and is therefore made FINAL.

Claim 13 has been rejoined, however Applicant is advised that any material divergence between claims 1 and 13 in subsequent amendments may render a future restriction by original presentation to the elected invention of claim 1.

Applicant species election wherein the lithium electrode is arranged to be out of direct contact with the negative electrode and the lithium ion being supplied to the negative electrode by flowing a current between the lithium electrode and the negative electrode through an external circuit is acknowledged. However Applicants statement of such "as recited in the Abstract" is unclear and only pertinent with respect to the claimed invention. Clarification of this statement (page 9 of Applicant's response filed March 27, 2009, sentence beginning with "For the purpose ...").

#### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

4. The information disclosure statements filed June 27, 2005 and October 6, 2008 have been placed in the application file and the information referred to therein has been considered as to the merits.

#### ***Drawings***

5. The drawings received June 27, 2005 are acceptable for examination purposes.

#### ***Specification***

6. The abstract of the disclosure is objected to because it exceeds 150 words. A 150-word limit has been imposed by the USPTO to conform to PCT applications and Pre-Grant Publications. See 37 CFR 1.72 and rule changes applied thereto. Correction is required. See MPEP § 608.01(b).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

7. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

For example, the order of the Brief Description of the Drawings and the Disclosure of the invention should be reversed so that the Brief Description of the Drawings precedes the Disclosure of the invention.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-2, 4, 6-10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,862,168 (Ando) in view of U.S. Patent No. 6,025,093 (Herr).

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Ando discloses a electrical storage device comprising: a positive electrode 1, a negative electrode 2, a lithium electrode 4 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 4 is arranged on an end with the negative electrode 2 (Fig. 1) and wherein lithium ions can be supplied to the negative electrode and/or the positive electrode by flowing current between the lithium electrode and the negative electrode and/or the positive electrode through an external circuit which connects the lithium electrode terminal with the negative electrode terminal and/or the positive electrode terminal. A positive electrode terminal is provided on the positive electrode, a negative electrode terminal is provided on the negative electrode, and a lithium electrode terminal is provided on the lithium electrode, the positive electrode terminal, the negative electrode terminal and the lithium electrode terminal include portions located at an outer portion of the electrical storage device (Fig. 6 as applied to claim 1).

The electrolyte is an aprotic organic solvent solution of a lithium salt (abstract as applied to claim 2).

The lithium current collector is porous and has lithium deposited in the pores (col. 15, ll. 6-12 as applied to claim 4).

The lithium electrode is made to face one of the electrodes (Fig. 1, for example, as applied to claim 6).

The electrodes can be stacked in multiple layers as shown in Fig. 1 (as applied to claim 7) or can be rolled (Figs. 4-6 as applied to claim 8).

The device is a capacitor (abstract as applied to claim 9).

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The electrodes are selected materials which reversibly carry lithium ions and/or anions and the electrostatic capacitance per unit weight of the negative electrode to the positive electrodes is at a ratio of at least 3:1 (negative electrode to positive electrode) with the positive electrode having a larger weight than the negative electrode (see table 8 as applied to claim 10).

Regarding claim 12, claim 12 is held to define an operational condition applied to the device. It does not clearly further define the product apart from that disclosed in Ando and fails to define the conditions for supplying the lithium ions. Since the prior art apparatus is capable of supplying lithium ions to the electric storage device, the prior art is inherently capable having some amount of lithium remaining after lithium is supplied, depending on the conditions for supplying (as applied to claim 12).

The device is used in an electronic apparatus and thus teaches of the combination as recited in claim 13.

Ando does not teach of the lithium electrode being arranged to be out of direct contact with the negative electrode (claim 1).

Regarding the lithium electrode being arranged to be out of direct contact with the negative electrode:

Herr teaches of a lithium ion cell wherein an auxiliary source of lithium is provided in the cell but is kept out of direct contact with the positive and negative electrodes (abstract and summary of the invention). Herr teaches that for carbon negative electrode materials, it is desired to keep the lithium metal out of direct contact



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with the anode to prevent the formation of reaction products between the anode and the highly reactive lithium metal (col. 1, ll. 40-47).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by physically isolating the lithium metal source as suggested by Herr since it would have prevented for formation of a reaction compound between the anode and the highly reactive supplemental lithium and would have improved the capacity of the electrochemical device.

9. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando in view of Herr as applied to claim 10 above, and further in view of U.S. Patent No. 6,461,769 (Ando '769).

The differences not yet discussed are of the electrodes having pores in the current collectors (claim 3) or of the negative electrode material being an insoluble and infusible base having a polyacene-based structure with a H/C ratio of 0.50 to 0.05.

Regarding the formation of pores in the current collectors (claim 3):

Ando '769 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by forming pores in the current collectors as taught by Ando '769 since it would have provided a configuration which enables free transfer of lithium ions within the cell.

Regarding the negative electrode material of claim 11:

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Ando '769 further teaches that such a material is an art-recognized negative electrode material in lithium ion devices (see col. 1, ll. 47-65 and col. 3, ll. 42-51).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by modifying the negative electrode active material to that taught in Ando '769 since such materials are art-recognized materials for reversibly carrying lithium and since the particular material of Ando '769 can reversibly carry a greater amount of lithium and thus has a higher lithium capacity as compared to other materials. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando in view of Herr as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-

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resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6,335,115 and U.S. Patent No. 5,601,951 are directed to electric storage cells which employ supplemental sources of lithium therein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/  
Primary Examiner, Art Unit 1795